



HYBRID VEHICLES

As the cost of fuel continues to skyrocket, more and more vehicle manufacturers are beginning to introduce versions of the hybrid vehicle into the market place. A number of manufacturers are selling their adaptation in the United States right now, with the number of vehicles available to exceed 30 models by the year 2010. In fact, most automobile manufacturers have announced plans to manufacture their own versions in the near future; you may have even seen Ford's Escape Hybrid, the first production hybrid SUV, currently on the roadways.

The table below lists some of the current hybrid vehicle models available here in the United States and their production year:

Hybrid Cars (US)	'05	'06
Toyota Prius	X	X
Honda Insight	X	X
Honda Accord	X	X
Toyota Highlander	X	X
Ford Escape	X	X
Lexus RX400	X	X
Mercury Mariner	X	X
GM Silverado	X	X
GM Sierra	X	X
Dodge Ram		X
Nissan Altima		X
Lexus GS		X
Saturn VUE		X

As the presence of these automobiles continue to increase on our roadways, the likelihood of MCFRS personnel performing extrications or suppressing fires on these vehicles also increases. There is an amplified risk of electrocution that is present with hybrid vehicles that we, as emergency services personnel, should be aware of:

- Hybrid vehicles have both a combustion engine powered by a 12 volt battery and an electric motor powered by a high voltage nickel metal hydride battery (in some cases as high as 300 volts)
- In most models, power cables that run from the Ni-MH batteries to electrical components are colored **orange** to distinguish them specifically from all other cables
- Where the standard 12 volt battery may be disconnected to remove power from the combustion engine, accessing the Ni-MH batteries is the least preferred method of removing power from the electrical motor (**do not cut or disconnect the orange cables to remove power**)

Here is a quick, down and dirty list of procedures to follow to reduce electrocution when faced with hybrid vehicle emergencies requiring extrication:

Hybrid Vehicle Emergency Procedures

- Hybrid vehicle identification (verify that the car is a hybrid through markings or prior familiarization)
- Stabilize the vehicle
- Access the passenger compartment
- Turn the ignition key OFF and remove completely (this powers down the high voltage electrical system)
- Ensure that the green power indicator light (present in most hybrid vehicles) goes out on the dash (**the combustion engine may be in sleep mode with the electrical motor running quietly**)
- Disconnect 12-volt battery

Visit this link at www.firehouse.com/extrication/hybrid for a basic outline of vehicle construction and emergency operations regarding some hybrid vehicle models.

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